CENTER FOR BEAM PHYSICS SEMINAR

"Linear Colliders: Achieving High Luminosity"

Gerald Dugan (Cornell University/LBNL)

Friday April 26, 2002, 10:30 AM
Albert Ghiorso Conference Room (71-264), LBNL
••• *Refreshments served at 10:20 AM* •••

Abstract: Four styles of linear collider are under active consideration by the high energy physics community as candidates for the next machine at the energy frontier. The four concepts (CLIC, the C-band linear collider, NLC/JLC and TESLA) differ widely in technology but share similar goals for energy and luminosity. The luminosity goal is more than three orders of magnitude larger than what has been achieved at the SLC. Nevertheless, as a result of many years of world-wide accelerator R&D efforts, feasible designs now exist for machines capable of reaching this goal. This talk will review the methods proposed by each linear collider concept to attain its luminosity goal. The most challenging issues facing each concept will be outlined and compared, and the areas requiring further R&D efforts will be noted.

Biographical data and research interests: Gerald Dugan is Professor of Physics at Cornell University. He is currently on sabbatic leave at LBNL, working with Wim Leeman's group on laser-plasma wakefield acceleration of electrons. He has been active in design work for a future (post-LHC) Very Large Hadron Collider, and has recently become involved with linear collider research and development efforts. At Cornell, he worked on CESR injector improvements, superconducting magnets for the CESR IR, long-term upgrades for higher luminosity, and operation of CESR at low energies as a tau-charm factory. Prior to his joining Cornell in 1995, he served from 1991 to 1995 as Associate Director of the SSC Laboratory, with specific responsibility for the superconducting accelerators, and head of the Fermilab Accelerator Division (1989-91). His Ph. D., in experimental intermediate energy nuclear physics, was granted by Columbia University in 1973.